

Gamma-Ray Radiation Dosimetry Utilizing
Changes in Optical Activity of Certain
Hydrocarbons. Letter to the Editor

78333

607/57-8-3-15/58

references; 2 Soviet, 2 French, 2 U.K., and 5 U.S.
The 5 most recent U.K. and U.S. references are: T.
Hardwick, Canad. J. Chem., 30, 23 (1952); E. Weber,
R. Schuler, J. Amer. Chem. Soc., 74, 4415 (1952); M.
Day, G. Stein, Nucleonics, 8, Nr 2, 34 (1951); S.
Goldblith, B. Proctor, Nucleonics, 7, Nr 2, 83 (1950);
H. Andrews, P. Shore, J. Chem. Phys., 18, 1165 (1950).

SUBMITTED: October 21, 1959

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SOV/3)-8-3-18/32

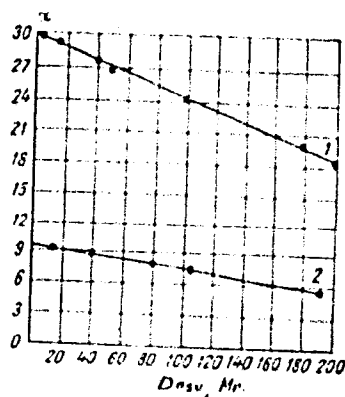


Fig. 1. Variation of the angle of rotation of the plane of polarization versus irradiation dose.

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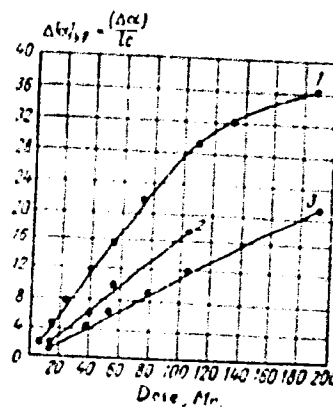


Fig. 2. Variation of the angle of rotation of the polarization plane of glucose solutions versus irradiation dose: (in %) (1) 5; (2) 10; (3) 20.

5(4)

AUTHORS: Starodubtsev, S.V., Member AS Uz SSR, SOV/166-19-1-9/11
Ablyayev, Sh.A., and Generalova, V.V.

TITLE: Radiolysis of Saccharose (Radioliz sakharozy)

PERIODICAL: Izvestiya Akademii nauk Uzbekskoy SSR, Seriya fiziko-
matematicheskikh nauk, 1959, Nr 1, pp 75-80 (USSR)

ABSTRACT: The influence of γ -rays (Co^{60}) to the water solution of
saccharose is investigated. It is stated: 1) change of the
specific rotation of the plane of polarization; 2) this change
increases with the radiation and decreases with the concentrat-
ion of the solution; 3) here the decision depends on the solvent;
4) a great quantity of hydrogen, oxygen, CO_2 and several hydro-
carbons is separated; 5) change of the solution velocity in
water; irradiated saccharose is solved ca. 2-3 times quicker
than the non-irradiated saccharose; 6) change of the colour of
the solution.

There are 15 references, 5 of which are Soviet, 2 English, and
8 American.

ASSOCIATION: Fiziko-tekhnicheskiy institut AN Uz SSR (Physico-Technical
Institute, AS Uz SSR)

SUBMITTED: September 10, 1958
Card 1/1

33661

S/058/61/000/012/015/083

A058/A101

21.7200 also 4112 3212

AUTHORS: Ablyayev, Sh.A., Generalova, V.V., Starodubtsev, S.V.

TITLE: Concerning gamma-dose measurement from variation in optical activity of carbohydrates

PERIODICAL: Referativnyy zhurnal. Fizika, no. 12, 1961, 70, abstract 12B230 (Tr. Tashkentsk. konferentsii po mirn. ispol'zovaniyu atomn. energii, 1959, v. 1, Tashkent, AN UzSSR, 1961, 159 - 163)

TEXT: Radiation effects in sugar and glucose solutions were investigated in the dose range 0-200 million roentgens. The coefficient of optical activity was monitored by means of a sensitive polarimeter. Results showed that the angle of rotation of the polarization plane decreases linearly with irradiation dose. The effect of concentration incident to this variation of the specific rotation was investigated. Glucose solutions are recommended as dosimetric liquids in view of their long preservability, the constancy of the changes that take place in them and their insensitivity to temperature.

[Abstracter's note: Complete translation]

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Card 1/1

GENERALOVA, V. V.

S/166/63/000/001/004/010
B104/B186

AUTHORS: Starodubtsev, S. V., Generalova, V. V., Polyak, G. V.

TITLE: The influence of the irradiation conditions on the radiolysis of carbohydrate solutions

PERIODICAL: Akademiya nauk Uzbekskoy SSR. Izvestiya. Seriya fiziko-matematicheskikh nauk, no. 1, 1963, 39 - 45

TEXT: Glucose, maltose and saccharose solutions have been irradiated in closed and open ampuls of molybdenum glass by Co^{60} with an activity of $120 \cdot 10^{13}$ g.equ. Ra, the dose rates being varied between 27 and 600 r/sec at temperatures between 0 and 80°C. The aim was to study the influence of the dose rate, the temperature and occluded gases on the properties of these solutions. Results: The rotation of the polarization plane increases with the dose rate. The variation of the specific rotation is the greater the smaller concentration. The polarization plane rotation of a solution depends only slightly on the dose rate, on the irradiation temperature, on the outer pressure and on the existence of occluded gases. The absorption maxima are in the near UV (264 - 270 mμ) and depend linearly on the dose

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The influence of the irradiation....

rate in wide range. Dose rate, pressure, presence of oxygen show almost no effect on the absorption maximum. The dioxyacetone yield increases considerably with the irradiation temperature. The upper limit of determination of the absorbed dose depends highly on the concentration of the solutions. At a glucose concentration of 9 % the upper limit is $300 \cdot 10^9$ r, 18 % - $450 \cdot 10^6$ r, 45 % - $800 \cdot 10^6$ r. Similarly, at high dose rates, a new acidic polymer with a molecular weight of 1200 - 4000 and an empirical formula $(C_6H_{10}O_{6.8})_n$ was discovered by S. A. Barker et al., Rad. Res., 16, N3, 1962. There are 6 figures.

ASSOCIATION: Institut yadernoy fiziki AN UzSSR (Institute of Nuclear Physics AS UzSSR)

SUBMITTED: October 9, 1962

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S/166/63/000/001/005/010
B104/B186

AUTHORS: Starodubtsev, S. V., Gangralova, V. V.

TITLE: The use of some carbohydrates for dosimetry of neutrons mixed with γ -fields.

PERIODICAL: Akademiya nauk Uzbekskoy SSR. Izvestiya. Seriya fiziko-matematicheskikh nauk, no. 1, 1963, 46 - 50

TEXT: The first section is a study of dose measuring in mixed radiation fields according to the variation of the polarization plane rotation in irradiated solutions of glucose, maltose and saccharose. It is found that, with a decrease of the neutron flux in the order of one magnitude within the range of a neutron flux of $2 \cdot 10^{13}$ neutrons/cm², the decrease of the specific rotation angle does not exceed 10 % at one integral dose. The second section deals with dose measuring according to an investigation of the absorption spectra of the irradiated solutions. The absorption spectrum of an 18 % glucose solution shows a monotonic increase of absorption density dependent on the radiation dose between 230 and 290 m μ . It is shown that his method; can be expanded for measuring small doses. In the Card 1/2

The use of some carbohydrates for ...

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third section the influence of the reactor radiation on the viscosity of glucose solutions is studied. There is a lower limit of the radiation dose above of which the viscosity increases considerably. The lower the concentration the lower the limit. If the solution is irradiated further a solid phase is precipitated. The method is of interest for studying the physico-chemical processes arising in the solution during irradiation but not of any value for quantitative measurements. There are 7 figures.

ASSOCIATION: Institut yadernoy fiziki AN UzSSR (Institute of Nuclear Physics AS UzSSR)

SUBMITTED: October 9, 1962

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STARODUBTSEV, S. V.; GENERALOVA, V. V.

Use of some carbohydrates for the dosimetry of neutron, mixed,
and γ -fields. Izv. AN UzSSR. Ser. fiz.-mat. nauk 7 no.1:
46-50 '63. (MIRA 16:4)

1. Institut yadernoy fiziki AN UzSSR.

(Carbohydrates) (Radiation—Dosage)

SRAPICHOV, A.S.; GENERALOVA, V.V., kand. fiz.-mat. nauk, otv.
red.; SOKOLOVA, A.A., red.

[Radioactivity and dosimetric control] Radioaktivnost' i
dozimetriceskii kontrol'. Tashkent, Izd-vo "Nauka" Uzb.SSR
1964. 207 p. (MIRA 17:6)

L 33796-66 EXT(n)

ACC NR: AP6025121

SOURCE CODE: UR/01/01/000/001/0062/0061

AUTHOR: Starodubtsev, S. V.; Abdukadyrova, I. Kh.; Generalova, V. V. 38

ORG: Institute of Nuclear Physics, AN UzSSR (Institut yadernoy fiziki AN UzSSR) B

TITLE: Loop dose transformer

SOURCE: AN UzSSR. Izvestiya. Seriya fiziko-matematicheskikh nauk, no. 1, 1966, 62-64.

TOPIC TAGS: physical chemistry, chemical reactor, radiation dosimetry, photoelectric detection equipment

ABSTRACT: The operating principle of a loop dose-meter^M is based on the recording of physicochemical changes in aqueous glucose solutions circulating through the active zone of a reactor. The use of such a system allows the remote and continuous measurement of an absorbed dose of mixed radiation in one of the vertical channels of a VVR-S reactor without substantial disturbance of the dose field of the active zone. The working part of the loop to be placed in the active zone will be U-shaped, spiral, or cylindrical, depending on the experimental requirements. An SA-2 photoelectric saccharimeter is used as the recording device. A comparison of the dosimetric characteristics for a loop with a spiral irradiator and one with a U-shaped irradiator showed that the change to a U-shaped irradiator results in an increase in the transformation coefficient. The transformation coefficient can also be increased by maintaining the level of dosimetric liquid or by adding to the device special expanders which increase the total volume of the dosimetric system. Orig. art. has: 2 figures. [JPRS: 35,534]

SUB CODE: 07, 09, 06 / SUBM DATE: 14Jul65 / ORIG REF: 004

Cord 1/1 BLS

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SHEVKUNOVA, Ye.A.; GENERALOVA, Z.N.

Ways of eliminating Toxoplasma from the body of an infected animal. Med. paraz. i paraz. bol. 32 no.4:451-454. 1963.
(MIRA 17:8)

2. Iz laboratorii toksoplazmoza (zav. - doktor biologicheskikh nauk D.N. Zasukhin) Otdela prirodnoochagovykh infektsiy (zav. - chlen-korrespondent AMN SSSR P.A. Petrishcheva) Instituta epidemiologii i mikrobiologii imeni N.F. Gamalei AMN SSSR (dir. - prof. P.A. Vershinova).

1ST AND 2ND EDITIONS		PROCESSING AND PROPERTY INDEX	
BC		B.I. 5	
<p>DETERMINATION OF SILICON IN STEEL AND CAST IRON. B. S. Gerasimov and P. P. Barafcev (Zavod. Lab., 1936, 5, 788-790).</p> <p>2 g. of steel are dissolved in 40 ml. of hot 1 : 1 50% HCl-50% HNO₃ (for cast Fe 1 : 1 50% HCl-33% HNO₃), and the solution is dehydrated by evaporation with H₂SO₄ to evolution of SO₂. The solution is diluted and filtered, and the ppt. washed with 25% HCl and H₂O, ignited in a stream of O₂, and weighed.</p> <p>R.T.</p>			
<p>ASM-AIA METALLURGICAL LITERATURE CLASSIFICATION</p>			
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The permanganate-arsenite method for determining manganese in steels and cast irons. B. A. Gencorov, *Zavodskaya Lab.* 6, 1431-9 (1937).—In detg. Mn in steels and cast Fe by the permanganate-arsenite method, the Bright and Lorrabee method of oxidizing Mn in the presence of H_2PO_4 (cf. C. A. 26, 36) gave better results than the Smith method (*Chem. News* 90, 237 (1904)) in the analysis of steels with 3.5% Cr and 9-10% W. By this method the sample can be increased up to 1 g. with the resulting greater accuracy of the detn. In the analysis of C steels the best results can be obtained by the method of Sandell, *et al.* (C. A. 30, 3770) by titrating the MnO_4^- with a 0.05 N soln. obtained by mixing equal vols. of 0.05 N AsH_3 and 0.05 N $NaNO_2$. The method gives results accurate to 0.01% independent of the Mn concn. (up to 1.5%), but is more sensitive to the presence of other metals than the above method. Approx. 20 references.

Chas. Blanc

ASB-SLA METALLURGICAL LITERATURE CLASSIFICATION

<div style="float: left; width: 15%;"> <div style="writing-mode: vertical-rl; transform: rotate(180deg);"> COMPLETE ELEMENTS PERIODIC TABLE METALS NON-METALS METALLOIDS GASES LIQUIDS SOLIDS </div> </div> <div style="float: right; width: 85%;"> <div style="text-align: center; border-bottom: 1px solid black; margin-bottom: 5px;"> PROCESSES AND PROPERTIES INDEX </div> <div style="border: 1px solid black; padding: 10px; min-height: 300px;"> <div style="position: relative; height: 100px;"> C A <div style="position: absolute; top: 10px; right: 10px; text-align: right;"> 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100 101 102 103 104 105 106 107 108 109 110 111 112 113 114 115 116 117 118 119 120 121 122 123 124 125 126 127 128 129 130 131 132 133 134 135 136 137 138 139 140 141 142 143 144 145 146 147 148 149 150 151 152 153 154 155 156 157 158 159 160 161 162 163 164 165 166 167 168 169 170 171 172 173 174 175 176 177 178 179 180 181 182 183 184 185 186 187 188 189 190 191 192 193 194 195 196 197 198 199 200 201 202 203 204 205 206 207 208 209 210 211 212 213 214 215 216 217 218 219 220 221 222 223 224 225 226 227 228 229 230 231 232 233 234 235 236 237 238 239 240 241 242 243 244 245 246 247 248 249 250 251 252 253 254 255 256 257 258 259 260 261 262 263 264 265 266 267 268 269 270 271 272 273 274 275 276 277 278 279 280 281 282 283 284 285 286 287 288 289 290 291 292 293 294 295 296 297 298 299 300 301 302 303 304 305 306 307 308 309 310 311 312 313 314 315 316 317 318 319 320 321 322 323 324 325 326 327 328 329 330 331 332 333 334 335 336 337 338 339 340 341 342 343 344 345 346 347 348 349 350 351 352 353 354 355 356 357 358 359 360 361 362 363 364 365 366 367 368 369 370 371 372 373 374 375 376 377 378 379 380 381 382 383 384 385 386 387 388 389 390 391 392 393 394 395 396 397 398 399 400 401 402 403 404 405 406 407 408 409 410 411 412 413 414 415 416 417 418 419 420 421 422 423 424 425 426 427 428 429 430 431 432 433 434 435 436 437 438 439 440 441 442 443 444 445 446 447 448 449 450 451 452 453 454 455 456 457 458 459 460 461 462 463 464 465 466 467 468 469 470 471 472 473 474 475 476 477 478 479 480 481 482 483 484</div></div></div></div>	
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4

7

Determination of small quantities of vanadium in steel and pig iron. N. A. Gerasimov and N. K. Kuchova. *Zhur. Anal. Khim.* 3, 225 (1946). Dissolve 0.2 g of steel in 10 ml. 7.5 N H₂SO₄. Add HNO₃ to decompose carbides and heat to remove N oxides. Dil. to 100-125 ml. and add 2% KMnO₄ to oxidize V to the quinquevalent state. Add 10-20 ml. of N H₂SO₄ soln., bring to a boil, add NH₄OH to give a distinct color, add 10 drops of H₂O₂ to oxidize Cr⁺⁺⁺ to Cr^{VI} and heat carefully for several min. taking care that the soln. remains alk. Allow the ppt. (Fe(OH)₃), coming off of the V to settle, add paper pulp, filter, and wash with 2% NH₄NO₃ using a few drops

of NH₄OH. Transfer the filter to a Pt crucible and ash carefully, avoiding fusion. Mix the residue with 2 g. of anhyd. Na₂CO₃ and fuse at approx 1100°. Leach the fusion product with 20 ml. of H₂O, bring to a boil, and if soln. is colored, add 1-2 drops of H₂O₂ and heat for another 15 min. Filter the solution = in. into 100 ml. volumetric flask and wash with hot 1% Na₂CO₃. Acidify with 1N H₂SO₄, adding 2 ml. in excess. Add 1 ml. of 85% H₃PO₄ and 2 ml. of a 5% Na₂WO₄ soln. and, after 20 min., compare the color with standards. If more than 0.5% of Cr is present repeat the pptn. of Fe and V in the presence of H₂O₂. M. Hirsch

Research group, Chem Lab, Central Sci Res Inst of Ferrous Metals, (-1946).

AND U.S. METALLURGICAL LITERATURE CLASSIFICATION

Handwritten: 7

Determination of small quantities of boron in steel. B. A. Gerasimov, *Zashchita Lab.* 12, 25-30(1966).—An accurate method to det. small quantities of B in steel (a new variation of the colorimetric quinizarin method) has been developed. To prevent losses of B in the form of hydrides, the sample is dissolved in 7 N H₂SO₄ in a flask under reflux condensation first in the cold, then with moderate heating. The residues were decomposed by H₂O₂ (30%) and the color was heated to remove all traces of H₂SO₄. B was separated from other elements by distn. with MeOH (preliminarily distd. to remove water), with the 65-75° fraction. The distillate was collected in NaOH soln. to which 1-2 drops of p-nitrophenol had been added. The distn. was considered complete when the first flash was filled with SO₂ vapors (5-10 min.). The app. was then disconnected, the condenser rinsed with several ml. of MeOH. The residue in the receiver containing all B in the form of Na borate was transferred to a Pt dish, evaporated, the dry residue ignited to decompose org. substances, the dish heated until the contents fused, the melt dissolved by heating in a min. quantity of hot distd. water, 10 ml. of H₂SO₄ (d. 1.84) added, the soln. fumed until SO₂ vapors appeared, the contents of the dish were cooled rapidly, and the soln. was rinsed in the colorimeter as

follows: Transfer the completely cooled soln. in series of solns. to a 25-30-ml. cylinder with ground stopper, wash the dish 2-3 times with small portions (1-2 ml.) of H₂SO₄, add to each of the cylinders 0.5-1.0 ml. of quinizarin soln., depending on the content of B, (dissolve 0.01 g. of quinizarin in 100 ml. of H₂SO₄ and dil. with the same acid to 125 ml.), mix the contents carefully, and compare the colors with those of standard solns. Small quantities of B produce a light blue-pink soln. The color of solns. with larger contents of B gradually changes to light blue with a pink shade or to pure light blue. Dependable results depend on the absence of water in standard solns., absence of oxidizing agents which decompose the color of the complex and of borohydrides, highly colored colorless H₂SO₄, and high-grade quinizarin. 15 references. W. R. Heun

7

Semimicrochemical determination of chromium and vanadium in ferrous metals H. A. Gentry, *Anal. Chem.* 13, 1043-R(1947). Treat 0.1 g. of sample with 4 ml. H_2SO_4 - H_2O (1:1), mist (100 ml. H_2SO_4 , 80 ml. H_2O , per l.). To the soln. add a few drops of HNO_3 to destroy the carbides, cool, dil. with 10-20 ml. of water, add 5 drops of 0.01 N Ag_2SO_4 , and 5 ml. of 10% $(NH_4)_2SO_4$ soln. Heat to boiling, cool quickly, add 10 ml. 9 N H_2SO_4 , and 3 drops of indicator soln. (0.2 g. phenylanthranic acid + 0.2 g. Na_2CO_3 in 100 ml. H_2O). Titrate the Cr^{6+} with 0.02 N $FeSO_4$. In the presence of V and W, dil. the original soln. with 5 ml. of water, oxidize the V with $KMnO_4$ (add dropwise), remove excess reagent with a little oxalic acid and titrate the soln. with $FeSO_4$ in the presence of the above indicator to a green color, to give the V. Then dil. the soln. with 35-40 ml. H_2O and oxidize Cr and V with 5 ml. of 10% $(NH_4)_2SO_4$ soln. and 5 drops Ag_2SO_4 soln. Add 5 drops 0.08 N $NaCl$ soln. and heat to reduce permanganate. Cool, add 10 ml. of 9 N H_2SO_4 , and titrate as above to get the sum of Cr-V. Det. Cr by difference. G. M. K.

5

Determination of Combined Nitrogen in High-Alloy Steels and some Ferro-Alloys. B. A. Gerasimov. (Zavodskaya Laboratoriya, 1947, vol. 13, pp. 314-317; Chemical Abstracts, 1948, vol. 42, May 20, col. 3284). In determining combined nitrogen in high alloy steels and some ferro-alloys containing tungsten, chromium, titanium, vanadium, manganum, silicon, and niobium, the results are low because of the inertness or difficult solubility of some nitrides. To overcome this, a two-stage method of dissolving the samples is proposed. First treat the sample with a mixture of H_3PO_4 , 4, H_2SO_4 , 1, and water 2 parts; to prevent loss of NH_3 during this stage, attach to the flask a trap containing water with a few drops of HCl or H_2SO_4 . Then evaporate until acid fumes form, add 2 g of dry $K_2S_2O_8$ in small portions. To dissolve the residual nitrides, add 3 g of K_2SO_4 and heat the solution until heavy fumes of H_2SO_4 are evolved. Continue heating until all the residue is dissolved. To determine the nitrogen, steam-distill after adding $NaOH$ for 1-25-1-50 hr until at least 100-200 ml are collected in a known volume of standard H_2SO_4 , and titrate the acid in the presence of methyl red and methyl blue.

ASM-35A METALLURGICAL LITERATURE CLASSIFICATION

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GENEROZOV, B. A.

PR 62175

USSR/Metals

Mar 1948

Nickel - Determination
Steel Alloys

"A Semimicrochemical Method of Nickel Determination
in Alloyed Steels," B. A. Generozov, Cent Sci Res
Inst Ferrous Metal, 3 pp

"Zavod Lab" Vol XIV, No 3

Develops semimicrochemical variation of the replace-
ment cyanometric method of determining nickel.
Differs from usual macrometric method of determining
weight composition. Determines best methods for
conducting these experiments. It is accurate and
requires little time and a minimum of apparatus and
materials.

62175

GENEROSOV, B. A.

PA 10077

Sep 49

USSR/Engineering - Metallurgy
Steel, Analysis

"Barytic Method for Determining Carbon in Steel and
Other Products of Metallurgical Production," B. A.
Generozov, Cen Sci Res Inst of Ferrous Metal, 5 1/4 pp

"Zavod Lab" Vol XV, No 9 - p.1019-1024

Suggests methods for determining very small amounts
of carbon in steel, ferroalloys, and other metallur-
gical products (accuracy to 0.001-0.002%), and for
semimicrochemical determination of carbon in steels
and cast iron in amounts of 0.1-0.05 grams.
Accuracy of this method is close to that for the
macro method, as shown in statistical table.

152T17

PA 163T55

USSR/Metals - Slag

Chemistry - Analysis, Slag

Jun 50

"Semimicrochemical Method for Determining the Basicity of Slags." B. A. Genetsov, Gen Sci Res Inst of Ferrous Metallurgy

"Zavod Lab" Vol XVI, No 6, pp 666-668

Reviews and discusses briefly all existing methods for determination of slag basicity and suggests simple semimicrochemical method developed by the Gen Inst of Ferrous Metallurgy. Aqueous suspension of slag sample, being shaken, releases all free calcium oxide into solution, which may be titrated

USSR/Metals - Slag

(Contd)

Jun 50

163T55

with some acid in presence of related indicator. Determination takes 12-14 min and accuracy is entirely satisfactory.

163T55

BUYANOV, N.V., kandidat tekhnicheskikh nauk, redaktor; ~~GENEROZOV, B.A.~~,
redaktor; DYMOV, A.M., professor, doktor, retsenzent; ~~TROITSKAYA,~~
M.I., kandidat khimicheskikh nauk, retsenzent; ~~STARODUBTSEVA, S.N.~~
redaktor.

[Modern methods of analysis in metallurgy] Sovremennye metody
analiza v metallurgii. Moskva, Gos.nauchno-tekhn.izd-vo lit-ry
po chernoi i tsvetnoi metallurgii, 1955 222 p. (MLRA 9:1)
(Metallurgical analysis)

Genesov, B.A.

✓ On the Determination of Nitrogen by the Distillation Method.
B. A. Genesov. (Zavodskaya Laboratoriya, 1955, 21, (3),
302-303). (In Russian). Various methods for accelerating
the distillation of ammonia during the determination of
nitrogen in iron and steel have been studied. Rates of distil-
lation under ordinary conditions, with the passage of steam
and with the passage of air under reduced pressure were
compared. The last gave the best results, all ammonia being
removed in 8 min from artificial ammonia solutions and in
10-12 min from solutions containing precipitated hydroxides.
The results of these experiments are incorporated into a
procedure proposed for the determination of nitrogen in
carbon or alloy steels.—a. x.

Metall

L

Central Sci. Res. Inst. Ferrous Metallurgy

GENEROZOV, B. A.

Organization of Chemical Testing in Metallurgical Works.
B. A. Generozov. (Zavodskaya Laboratoriya, 1955, 21, (1),
1955). (In Russian). The transfer of analytical samples and
results in iron and steel works is discussed.—R. K.

BORZDYKA, A.M., doktor tekhnicheskikh nauk; KAMINSKIY, E.Z., kandidat fiziko-matematicheskikh nauk; BUYANOV, N.V., kandidat tekhnicheskikh nauk; ~~GENEROZOV, R.A.~~ dotsent; GOLOVCHINER, Ya.M., inzhener.

"Properties of materials used in turbine building and methods of testing them." Reviewed by A.M.Boradyka and others. Zav.lab.22 no.4: 511-512 '56. (Metals--Testing) (MIRA 9:7)

32-24-6-12/44

AUTHOR: Generozov, B. A.

TITLE: International Conference on Standardization (Mezhdunarodnaya konferentsiya po standartizatsii)

PERIODICAL: Zavodskaya Laboratoriya, 1958, Vol 24, Nr 6, pp 782 - 783 (USSR)

ABSTRACT: From November 25 to December 4, 1957 the conference of the countries of the peoples' democracies took place with the following delegates taking part in the work of the subcommission for the standardization of the Methods of Analysis for Cast-Iron and Steel: for the Hungarian People's Republic: Nagel, for the German Democratic Republic: Doctor R. Kraus, for the Polish People's Republic: V. Dontsova, Ya. Zenkevich and Ya. Inglot, for the Roumanian People's Republic: Karlyatsyanu, for the Soviet Union: B.A. Generozov and for the Czechoslovakian Republic: Professor V. Mayer. Yan Inglot (Polish People's Republic) was the president. Projects for international standards proposed by the Polish Committee for Standards (PCS) and by the German Bureau for Standardization were considered; various proposals were made, among them were the determination of carbon,

Card 1/2

International Conference on Standardization

32-24-6-42/44

the barite method, the determination of manganese, the determination of sulfur, the determination of phosphorus, the determination of strontium etc. The sample-taking for the chemical analysis of cast-iron and steels was explained as the second problem. Among other things it was decided to work out various standard methods in some states. Doctor Kraus proposed to standardize the apparatus for analyses especially for the determination of carbon and sulfur.

ASSOCIATION: Tsentral'nyy nauchno-issledovatel'skiy institut khimicheskoy metallurgii (Central Scientific Research Institute for Iron Metallurgy)

1. Industry---Standards

Card 2/2

GENEROZOV, Boris Alekseyevich; PONOMAREV, A.I., red.; PETRUSHA, L.F.,
red.izd-vo; ISLENT'YEVA, P.G., tekhn.red.

[Industrial analysis in the metallurgical and coke industries]
Tekhnicheskii analiz v metallurgicheskoi i koksokhimicheskoi
proizvodstve. Moskva, Gos.nauchno-tekhn.izd-vo lit-ry po
chernoi i tsvetnoi metallurgii, 1959. 251 p. (MIRA 13:1)
(Metallurgical analysis) (Coke industry--Quality control)

ZHURAVLEV, I.P.; GEMEROZOV, K.K.

~~XXXXXXXXXXXXXXXXXXXX~~
Largest combine of worsted manufacture in the Moscow area. Tekst.
prom. 17 no.9:4-6 S '57. (MIRA 10:11)

1. Direktor Moninskogo kamvol'nogo kombinata g. Losino-Petrovskiy
(for Zhuravlev). 2. Starshiy ekonomist Moninskogo kamvol'nogo
kombinata, g.Losino-Petrovskiy (for Gemerov).
(Moscow Province--Woolen and worsted manufacture)

KUZOVKOV, Nikolay Timofeyevich; DOBROGORSKIY, S.O., prof., doktor
tekhn.nauk, retsentsent; GEMEROZOV, M.N., inzh., red.;
BELEVTSOVA, A.G., izdat.red.; FUKHLIKOVA, N.A., tekhn.red.

[Theory of automatic control based on frequency methods]
Teoriia avtomaticheskogo regulirovaniia, osnovannnaia na
chastotnykh metodakh. Izd.2., dop. i perer. Moskva, Gos.
nauchno-tekhn.izd-vo Oborongiz, 1960. 445 p.

(MIRA 14:3)

(Automatic control)

BORISENCK, I.T.; GENEKOZOV, B.N.; YEREMEYEV, N.V.; KARATYSHKIN,
V.V.; KUZOVKOV, N.T.; BORISENOK, I.T.; KULIEVSEAYA, N.V.;
SAVINOV, G.I., kand.fiz.-mat. nauk, dots. [deceased];
PIROGOV, I.Z.; Prinimali uchastiye: BALAYEVA, I.A.; BALAKIN,
B.M.; BELYAYEVA, G.M.; BELYAKOV, V.I.; VELERSHTEYN, R.A.;
ZHARKOV, G.M.; KOROLEVA, V.Ye.; LITVIN-SEDOY, M.Z.; POPOV,
A.I.; PRIVALOV, V.A.; STUKALOVA, L.M.; CHISTYAKOV, A.I.;
SAVIN, A.B., red.; CHISTYAKOVA, K.S., tekhn. red.

[Laboratory work in theoretical and applied mechanics] Labo-
ratornyi praktikum po obshchei i prikladnoi mekhanike. Mo-
skva, Izd-vo mosk. univ. 1963. 233 p. (MIRA 16:12)

1. Kafedra prikladnoy mekhaniki Moskovskogo gosudarstvennogo
universiteta (for Balayeva, Balakin, Belyayeva, Belyakov,
Velershteyn, Zharkov, Korolova, Litvin-Sedoy, Popov, Privalov,
Stukalova, Chistyakov).

(Mechanics--Laboratory manuals)

GENEROZOV, M.V.

SUKACHEV, A.P., dotsent, kandidat tekhnicheskikh nauk; RYAZANOV, G.A., kandidat fiziko-matematicheskikh nauk (Leningrad); GUREVICH, L.E., doktor fiziko-matematicheskikh nauk (Leningrad); GENEROZOV, M.V., inzhener (Saratov).

Terminology of theoretical electric engineering. Elektrichestvo no.11:76-80
N '53. (MLRA 6:10)

1. Khar'kovskiy politekhnicheskii institut im. Lenina (for Sukachev).
(Electric engineering--Terminology)

GENEROZOV, P.A.

AVRASIN, Ya.D., kandidat tekhnicheskikh nauk; BERG, P.P., professor, doktor tekhnicheskikh nauk, BERNSHTEYN, M.L., kandidat tekhnicheskikh nauk; GENEROZOV, P.A., starshiy nauchnyy sotrudnik; GLINER, B.M., inzhener; DAVIDOVSKAYA, Ye.A., kandidat tekhnicheskikh nauk; YELCHIN, P.M., inzhener; YEREMIN, N.I., kandidat fiziko-matematicheskikh nauk; IVANOV, D.P., kandidat tekhnicheskikh nauk; KNOROV, L.I., inzhener; KOBRIN, M.M., kandidat tekhnicheskikh nauk; KORITSKIY, V.G., dotsent; KROTKOV, D.V., inzhener; KUDRYAVTSEV, I.V., professor, doktor tekhnicheskikh nauk; KULIKOV, I.V., kandidat tekhnicheskikh nauk; LEPSTOV, V.A., kandidat tekhnicheskikh nauk; LIKINA, A.F., inzhener; MATVEYEV, A.S., kandidat tekhnicheskikh nauk; MIL'MAN, B.S., kandidat tekhnicheskikh nauk; PAVLUSHKIN, N.M., kandidat tekhnicheskikh nauk; PITTSYN, V.I., inzhener [deceased]; RAKOVSKIY, V.S., kandidat tekhnicheskikh nauk, RAKHSHTADT, A.G., kandidat tekhnicheskikh nauk; RYABCHENKOV, A.V., professor, doktor khimicheskikh nauk; SIGOLAYEV, S.Ya., kandidat tekhnicheskikh nauk; SMIRYAGIN, A.P., kandidat tekhnicheskikh nauk, SUL'KIN, A.G., inzhener; TUTOV, I.Ye., kandidat tekhnicheskikh nauk, KHRUSHCHOV, M.M., professor, doktor tekhnicheskikh nauk; TSYPIN, I.O., kandidat tekhnicheskikh nauk; SHAROV, M.Ya., inzhener; SHERMAN, Ya.I., dotsent; SHMELEV, B.A., kandidat tekhnicheskikh nauk; YUGANOVA, S.A., kandidat fiziko-matematicheskikh nauk; SATEL', E.A., doktor tekhnicheskikh nauk, redaktor; SOKOLOVA, T.F., tekhnicheskii redaktor

[Machine builder's reference book] Spravochnik mashinostroitel'ia; v shesti tomakh. izd-vo mashinostroitel'nogo lit-ry. Vol.6. (Glav. red.toma E.A.Satel'. Izd. 2-oe, ispr. i dop.) 1956. 500 p. (MLRA 9:8)
(Machinery--Construction)

ГЕНЕРАЛ, ВЛАДИ ИВАНОВИЧ

СЕВЕРО-КАВКАЗСКИЙ ВОПРОСЫ РЫНОК И ЕГО ЗНАЧЕНИЕ ДЛЯ РОССИИ. ПЕТРОГРАД, ПИ.
РЕД. ПЕРИОДИЧЕСКИХ ИЗД. МИНИСТЕРСТВА ФИНАНСОВ, 1918. 164 p.

At head of title: МИНИСТЕРСТВО ОРГОВЛИ И ПРОМЫШЛЕННОСТИ. СДЕЛКА ЗАКЛУЧЕНА.

GENEROSOV, Yu.

Get off to a good start. Prom.koop. 14 no.2:37 7 '60.
(MIRA 13:5)

1. Zamestitel' predsedatelya prezidiuma Rossiyskogo soveta
obshchestva "Spartak."
(Sports)

L 12614-63

EWI(1)/BDS/ES(a)/ES(b)/ES(c)/ES(k) AFFTC Pb-4 A/DD

ACCESSION NR: AP3001542

S/0216/63/000/003/0391/0404

AUTHOR: Tageyeva, S. V.; Brandt, A. B.; Korshunova, V. S.; Generozova, I. P.

TITLE: Optic system characteristics of a Chlorella suspension and its
photosynthetic activity 2

SOURCE: AN SSSR. Izvestiya. Seriya biologicheskaya, no. 3, 1963,
391-404

TOPIC TAGS: chlorella, suspension, optic system, photosynthesis, autotrophic
component

ABSTRACT: Chlorella suspensions are of interest as a possible food source
and as an autotrophic component in space ships for prolonged flights. Data
on the optic characteristics of such suspensions can be useful for more
intensive growth of Chlorella cells. Several Chlorella suspension strains
of different density were investigated on a general purpose apparatus for
studying optic characteristics. Light absorption by the same type of
Chlorella suspension conforms to the Bugar-Lambert-Beer law and the absorption val-
ue is determined mainly by pigment (chlorophyll) concentration. But the absolute

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L 12614-63

ACCESSION NR: AP3001542

absorption value for different Chlorella types depends on cell size and microscopic structure. Small cells of a Chlorella suspension with a chloroplast of a more regular spheroid shape have a greater light diffraction capacity than large cells with a cuplike chloroplast. The light diffraction coefficient of low concentration Chlorella suspensions is proportional to the number of cells in the volume tested. Optic properties of Chlorella suspensions change according to the regularities established in physics. The light absorption coefficient of a Chlorella suspension increases slightly during bubbling at 90 l per hr due to light diffusion at the interphase boundary of water and air but there is no change in the optic properties of the Chlorella cells. Data on optic parameters of Chlorella suspensions can provide insights into the nature of photosynthesis and help produce unicellular cultures of higher productivity. This type of study should be developed together with methods of studying ultrathin structures, biophysical indices, and the respective functional states of individual cells and of suspensions as a whole. Orig. art. has: 10 figures.

ASSOCIATION: Institut biologicheskoy fiziki Akademii nauk SSSR (Institute of Biological Physics, AN SSSR)

Card 2/32

TAGEYEVA, S. V.; GENEROZOVA, I. P.; BRANIT, A. B.; KORSHENOVA, V. G.

"Relations between the ultra-fine structure of the plant plastid apparatus and its functions."

report submitted for 10th Intl. Botanical Cong, Edinburgh, 3-12 Aug 64.

Inst of Biological Physics, AS USSR, Moscow.

ACCESSION NR: AT4037704

S/2865/64/003/000/0335/0354

AUTHOR: Tageyeva, S. V.; Brandt, A. B.; Korshunova, V. S.; Generozova, I.P.

TITLE: Characteristics of algae suspensions as optical systems

SOURCE: AN SSSR. Otdeleniye biologicheskikh nauk. Problemy kosmicheskoy biologii, v. 3, 1964, 335-354

TOPIC TAGS: light absorption, photosynthesis, closed ecological system, algae, Chlorella, life support

ABSTRACT: The optical properties of suspensions of Chlorella pyrenoidosa P-82 and Chlorella sp. K strains have been studied with the aid of a universal device for investigation of optical properties of plant leaves. Light absorption by Chlorella suspensions is largely determined by concentration of pigments (chlorophyll). Nevertheless, the absolute value for various strains of Chlorella strongly depends on cell dimensions and their microscopic structures. Many cells of the Chlorella sp. K suspension possessing chloroplasts of a more regular spherical shape have a greater light scattering capacity than the larger Chlorella pyrenoidosa P-82 cells which have a cup-shaped chloroplast. The value of the scattering

Cord 1/3

ACCESSION NR: AT4037704

coefficient of both types of *Chlorella* suspensions at low densities is proportional to the density of suspensions. Transmission of a directed light beam by the suspension does not depend on the wavelength of the light, but can be explained by the "sieve effect." In the study of synchronous cultures of *Chlorella pyrenoidosa* P-82, considerable changes were found in its optical properties during development of cells. The greatest light absorption was found in the period of active growth and chlorophyll accumulation, i. e., 4 to 9 hr after the onset of the autospore growth. After cell division the amount of chlorophyll and the intensity of photosynthesis in the new autospores decrease considerably. At the same time the coefficient of absorption and the photosynthesis of the whole suspension continues to increase owing to the increase of suspension density at the expense of divided cells. An insignificant increase in the coefficient of light absorption of the *Chlorella* suspension when air is bubbled through the suspension (90 l/hr) is due to the scattering of light at the interface between water and air and not to a change in the optical properties of the cells. Knowledge of the optical parameters of strains of algae can provide valuable information on the nature of their photosynthetic mechanism and can also be used for purposes of calculation in designing equipment for obtaining high-productivity cultures of unicellular algae. On the basis of the data obtained, it is possible to draw the conclusion that if various

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strains of Chlorella are to be used as one of the basic autotrophic components in the spacecraft system of the future, the particular natures of their optical systems should be studied in detail so that they can be taken into consideration in designing life support equipment.

ASSOCIATION: none

SUBMITTED: 00

ENCL: 00

SUB CODE: PH, LS

NO REF SOV: 015

OTHER: 014

Card

1 3/3

GINERKOZOVA, Inna Pavlovna; TAGETAYA, S.V., kadr. biol. nauk,
otv.red.; PACHEKOVSKIY, Yu.A., red.

[Ultrastructure of chloroplasts; an atlas] Ul'trastruktura
khloroplastov; atlas. Moskva, izd-vo "Nauka," 1965. 21 p.
(MIRA 18:3)

ALIMOV, Yevgeniy Vladimirovich; GENESEV, N. Bella Isakovna;
FILIPPOVICH, K.A., red.

[Selection of the optimum technological process for the
manufacture of foundry molds and cores for unit and small-
lot production] Vybór optimal'nogo tekhnologicheskogo pro-
tssesa izgotovleniia liteinykh form i sterzhnei pri indi-
vidual'nom i melkoseriilnom proizvodstve. Leningrad, 1965.
18 p. (MIRA 18:7)

66-111-14-1
AUTHOR: Generson, I.G., Engineer.

122-1-14/34

TITLE: The effect of the reduction factor in drawing out on the mechanical properties of disc type forgings. (Vliyanie koeffitsiyenta ukova pri vytyazhke na mekhanicheskiye svoystva pokovok tipa diskov)

PERIODICAL: "Vestnik Mashinostroyeniya" (Engineering Journal), 1957, No.1, pp. 49 - 55 (U.S.S.R.)

ABSTRACT: Whilst the really vital operation in the forging of disc blanks is upsetting, normally conducted to the extent of a height reduction by a factor of 2 or 3, the forging coefficient in drawing out the billet has also been held around 2.5 to 3.0 (in accordance with GOST 2335-50) without real justification. The importance of a correct choice is based on the desire to use smaller billets (having less non-uniformity) without intermediate upsetting and drawing out operations. A series of tests (carried out by the Nevsk Engineering Plant) on 0.45% carbon steel (including 0.3% Si, 0.56% Mn, 0.36% Cr, 0.24% Ni, 0.023% S and 0.027% P) discs of 200 or 120 mm height and various diameters representing drawing out reduction factors between 1.1 and 5.0 is reported. The blanks were drilled in the centre and machined all over before a double normalising treatment. Tensile test specimens were cut in the tangential,

Card 1/2

The effect of the reduction factor in drawing out on the mechanical properties of disc type forgings. (Cont.) 122-1-14/34
radial and axial directions. The test results are shown in graphs and the macro-structure is reproduced in photos. Detailed discussion concludes that with an upset factor between 3.0 and 5.4, the reduction factor in the drawing out of billets has almost no effect on the mechanical properties of forged discs in the tangential and radial directions. Only the ductility (expressed by the reduction in area) in the axial direction specimens suffers a drop which becomes pronounced below a reduction factor of 3.

There are 6 figures, including 3 graphs and 1 photograph
Card 2/2 and 2 tables.

ASSOCIATION: Nevsk Engineering Plant imeni Lenina (Nevskiy
Mashinostroitel'niy Zavod imeni Lenina)

AVAILABLE: Library of Congress

SOV/137-59-3-6890

Translation from: Referativnyy zhurnal Metallurgiya, 1959, Nr 3, p 282 (USSR)

AUTHOR: Generson, I. G.

TITLE The Technology of Forging of Impeller Wheels for Centrifugal Compressors (Tekhnologiya kovki diskov tsentrobezhnykh kompressornykh mashin)

PERIODICAL: V sb.: Novoye v kuznechno-shtampovoykh tsekhakh Leningrada Leningrad, 1958, pp 44-77

ABSTRACT. The author examines the peculiarities of forging of large-diameter (up to 1000-1200-mm) impeller wheels with a thin rim (up to 2-3 mm in the narrowest section) and a high hub (up to 150-200 mm). Properties of steels employed in the manufacture of the wheels and considerations on the location of rings on the forgings for purposes of mechanical testing are discussed together with the compilation of drawings of the forgings. Problems in the selection of the ingot, computation of the ratio of the original cross section to the final cross section of the forging, as well as temperature conditions of heating of the billets are analyzed in detail. Various techniques of manufacturing of forgings are described: Open-die forging, forging in backing dies, and

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SOV/137-59-3-6890

The Technology of Forging of Impeller Wheels for Centrifugal Compressors

forging followed by bending in the dies of a hydraulic press. A table of the corresponding coefficients of utilization of metal is also given. The problem of temperature conditions of cooling is discussed, and cooling graphs for various types of steels are shown.

I. G.

Card 2/2

SOV/137-59-7-16177

Translation from: Reformativnyy zhurnal, Metallurgiya, 1959, Nr 7, p 276 (USSR)

AUTHOR: Generson, I.G.

SUBJECT: Forging of Disks and Covers for Turbo-Airblowing Machines

PERIODICAL: Tr. Nevsk. Mashinostr. z-da, 1958, Nr 4, pp 133 - 171

ABSTRACT: The production of forged disks and covers is described in detail. Changes in the mechanical properties depending on shape, forging conditions etc. are investigated. It was stated that increased ingot weight caused reduced ductility and σ_b characteristics of test disk rings. In shrinkage (coefficient of reduction 3 - 5.4), decreased reduction of size in drawing did not affect the mechanical properties in the tangential and radial direction but had a negative effect on mechanical properties (in particular on characteristics of ductility) in the axial direction. Cooling and heat treatment conditions and quality control of forged disks were also investigated.

Ye.L. ✓

and 1/1

AUTHOR: Generson, I. G., Engineer

129-58-8-10/16

TITLE: ~~Influence of the Temperature at the Termination of~~
Forging on the Mechanical Properties of the Forgings
(Vliyaniye temperatury kontsa kovki na mekhanicheskiye
svoystva pokovok)

PERIODICAL: Metallovedeniye i Obrabotka Metallov, 1958, Nr 8,
pp 46-51 + 1 plate (USSR)

ABSTRACT: The experiments were carried out with discs of the
Steel 40N of the following composition: 0.45% C, 0.20% Si,
0.65% Mn, 0.96% Ni, 0.018% S and 0.022% P, smelted in a
10-ton electric furnace with a basic bottom. The blanks
were forged in the form of smooth 400 mm dia., 80 mm high
discs from ingots weighing 1200 kg. After heating to
1160°C the ingots were deformed by means of a 6-ton hammer
to a diameter of 200 mm (terminating forging at 860 to
900°C) and, following that, they were cut into blanks of
320 mm length, which were subsequently upset to 80 mm on a
three-ton hammer. This operation was effected under
various thermal conditions within the temperature range
used for the given steel when forging turbine discs. The
initial forging temperature was varied between 900 and
1250°C, the temperature at the end of the forging varied
between 800 and 1150°C. A part of the blanks were upset

Card
1/5

129-58-8-10/16

Influence of the Temperature at the Termination of Forging on the Mechanical Properties of the Forgings

without additional preheating, immediately after extrusion and cutting of the ingot; the other blanks were heated in a mazout chamber furnace to specified temperatures. The annealing time of the blanks was 2 to 3 hours, which corresponded to the longest duration of heating of blanks during forging of discs of turbines and compressors of small and of medium dimensions. Six discs were forged according to each variant and these were subjected to the following preliminary heat treatment: isothermal annealing of the forgings in the furnace at 600 to 650°C for 4 hours followed by cooling in air; annealing with recrystallisation according to the normal production process with cooling of the forgings in the furnace down to 150°C; isothermal annealing in the furnace for 4 hours at 600 to 650°C followed by normalisation annealing at 850 to 860°C. After rough machining the discs were heat treated according to a specified regime, namely, quenching in oil from 850 to 860°C and tempering at 610 to 630°C.

Card 2/5

129-58-8-10/16

Influence of the Temperature at the Termination of Forging on the Mechanical Properties of the Forgings

cooling in the furnace down to 300°C. From the heat treated discs ring-shaped test specimens were cut with dimensions as shown in Fig.1, p 46, for investigating the strength properties in the tangential direction. The tensile tests were effected on specimens of 10 mm dia., 100 mm length and the impact tests were effected on Mesnager type specimens. The average values of the mechanical properties of the metal of the experimental discs as a function of the temperature at the termination of the deformation process are graphed in Fig.2, p 47, and it can be seen from the curves that, with increasing of these temperatures from 800 to 1000°C, there is a clear tendency to an increase in the ductility and the impact strength; termination of the forging at 1070 to 1080°C does not reduce the strength properties of the discs. An appreciable decrease of the ductility and the impact strength was observed only if the temperature at the termination of the forging exceeded 1080 to 1100°C.

Card 3/5 The finest grain and most uniform structure in the normalised and in the heat treated state is observed in

129-58-8-10/16

Influence of the Temperature at the Termination of Forging on
the Mechanical Properties of the Forgings

discs for which the temperature at the termination of forging equalled 1000 and 1070°C (Fig.3, plate facing p 41). The presence of large grains, which are non-uniform as regards size, was observed in discs, the forging of which was terminated at 800°C. Investigations were also made on experimental production batches of turbine compressor discs (Fig.4) with hub thicknesses of 170-200 mm forged from blanks of the Steels 40N, 40Kh, 34KhM and 34KhN3M. On the basis of the obtained results changes were introduced in the technology of forging a number of important turbine components made of the above enumerated steels, namely, the temperatures at the termination of the deformation were increased to 1050 to 1080°C using intermediate heating to the relatively high temperature of 1050°C. The results obtained with a large number of components forged from steels of various heats according to the here described new regimes have confirmed the conclusions made on the basis of experimental work. No forgings were detected which had unsatisfactory fractures and necessitated using particular types of heat treatment

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129-58-8-10/16

Influence of the Temperature at the Termination of Forging on
the Mechanical Properties of the Forgings

after forging with temperatures of up to 1080°C on the termination of the forging. Introduction of the new thermal regimes of forging brought about an increase of the productivity of the forging equipment by 10 to 20% and enabled introduction of more rational technological processes using forging hammers of smaller ratings. There are 4 figures, 1 table and 3 references, all of which are Soviet.

ASSOCIATION: Nevskiy mashinostroitel'nyy zavod imeni V. I. Lenina
(Neva ~~Machine~~ Works imeni V. I. Lenin)

Card 5/5

1. Forgings--Mechanical properties
2. Forgings--Temperature factors
3. Forgings--Test methods

AUTHOR: Generson, I.G., Engineer SOV/122-58-12-13/32
TITLE: Concerning the Use of the Bend Test with Forgings for Important Components (Ob ispytaniyakh na zagib pokovok otvetstvennogo naznacheniya)
PERIODICAL: Vestnik Mashinostroyeniya, 1958, Nr 12, pp 35-37 (USSR)
ABSTRACT: Test pieces are usually cut from all important forgings (turbine discs, shafts etc.) and are subjected to tensile, elongation, impact and bend tests. Table 1 gives the minimum requirements for three types of forging. Analysis (Table 2) of test pieces, taken over 3 years, from 12,762 forgings, shows 73 instances of failure to satisfy the bend test together with failure to meet one or other of the tensile, elongation or impact test requirements. In only 29 cases, the bend test requirement was not met while all other tests were satisfied. Of these cases, the bend test was satisfied in 18 instances when the test was repeated. Table 3 shows the actual values obtained for all tests in 16 cases where the bend test piece had failed on first test and passed on repeated test (the coupled figures in each column are for first test and for repeat test). The evidence is that bend test failures, alone,

Card 1/3

SOV/122-58-12-13/32

Concerning the Use of the Bend Test with Forgings for Important Components

give little proof that the material has insufficient degree of plasticity - they are in fact mainly attributable to local imperfections such as inclusions in the metal. Furthermore, the comparatively large specimen required for bend test demands the addition of a considerable margin to the forgings in many cases, to provide sufficient material for cutting out the test piece. This margin often takes the form of a boss on the forging and material from this boss does not represent the true property of the forging itself. In view of the doubtful value of the bend test, and the fact that local defects such as inclusions are more properly found by crack detection techniques, it is suggested that this test might

Card 2/3

SOV/122-58-12-13/32

Concerning the Use of the Bend Test with Forgings for Important Components

will be eliminated from the standard requirements, with consequent saving in time and material, and improvement to the general properties of the forging through elimination of unnecessary margins.
There are 2 figures and 3 tables.

ASSOCIATION: Nevskiy mashinostroitel'nyy zavod imeni V. I. Lenina (Nevskiy Machinery Plant imeni V. I. Lenin)

Card 3/3

88215

S/114/60/000/002/004/007
E193/E183

16 2120

AUTHOR: Generson, I.G., Engineer

TITLE: The Effect of the Degree of Deformation on the
Mechanical Properties of Forged Discs

PERIODICAL: Energomashinostroyeniye, 1960, No. 2, pp. 34-37

TEXT: As a rule, the mechanical properties of steel forgings are better than those of cast material. The object of the present investigation was to study the effect of degree of deformation on the mechanical properties of forged turbine, or compressor, discs. Medium-carbon steel 45, containing 0.47% C, 0.24% Si, 0.56% Mn, 0.028% S, and 0.024% P, was used in the experiments. A 10 t electric-arc furnace, with basic lining, was used for melting the steel, which was cast into tapered, 1.8 t ingots of octagonal cross-section. All the ingots were then hot-forged to cylindrical shape, the degree of deformation (the final/initial length ratio) attained in this operation being 1.2. Blanks, 400 mm in diameter and 130-1040 mm thick, were then cut from the bottom portions of the ingots, and these were forged into flat discs, all 130 mm thick and 400-1095 mm in diameter. In this manner, a series of forgings

Card 1/5

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S/114/60/000/002/004/007

E193/E183

The Effect of the Degree of Deformation on the Mechanical Properties of Forged Discs

IX
was obtained with the degree of deformation (the initial/final thickness ratio) varying between 1 and 8. After forging, the discs were cooled in the furnace, according to a schedule recommended for this steel. The discs were then machined to 120 mm thickness, and holes 80 mm in diameter were bored in the centres, after which the discs were normalized at 860 °C and tempered at 600 °C. Test pieces were then cut from various portions of each disc for the determination of the mechanical properties of the forgings in the axial, radial and tangential directions. U.T.S. (σ_b , kg/mm²), yield point (σ_s , kg/mm²), reduction of area (ψ , %), elongation (δ , %) and impact strength (a_k , kgm/cm²), were determined in each case. The results are given in the figure reproduced below,

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S/114/60/000/002/004/007
E193/E183

The Effect of the Degree of Deformation on the Mechanical Properties of Forged Discs

where σ_b , σ_s , ψ , δ , and a_k (in kg/cm² and % respectively) of test pieces cut in (a) tangential, (6) radial, and (8) axial direction, are plotted against the degree of deformation (as defined above) of the forged discs: continuous, broken, and dotted curves relate to results obtained on test pieces cut at a distance of one third of the radius from the central hole, near the central hole, and at the periphery of the disc, respectively. The following conclusions were reached. 1) As far as the density of the metal and the mechanical properties in the tangential and radial directions are concerned, no advantage can be gained in forging steel 45 discs by increasing the degree of deformation above 3. 2) The mechanical properties (particularly plasticity and impact strength) of forged discs in the axial direction, deteriorate with increasing degree of deformation. Consequently, in cases when turbine discs are subjected to axial service loads, the degree of deformation in forging should be limited to 2-3.

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S/114/60/000/002/004/007
E193/E183

The Effect of the Degree of Deformation on the Mechanical Properties of Forged Discs

- 3) The mechanical properties of the forged discs are not affected by the presence of isolated regions of dendritic structure.
- 4) Following the findings of the present author, the forging procedure in several turbine producing factories was changed, in that discs which previously had been forged to attain the degree of deformation (measured at the hub) equal 5 to 6, are now being forged with the degree of deformation equal 3 to 3.5. This has brought about a 10-15% increase in the productivity of the forging equipment and lowered the percentage of rejects. X
- There are 4 figures, 1 table and 4 Soviet references.

Card 5/5

S/182/62/000/005/002/007
E038/D113

AUTHOR: Generson, I.G.

TITLE: Dependence of the disc quality on the forging reduction ratio

PERIODICAL: Kuznechno-shtampovochnoye proizvodstvo, no. 5, 1962, 5-9

TEXT: The effect of the forging reduction ratio on the quality of 13 smooth discs forged from 5.7 t, 300 mm thick ingots was studied at the Nevskiy zavod (Neva Plant). Discs made from 34XH3M (34XhN3M) steel were tested. The initial and final forging temperatures were 1170-1190°C and 850-900°C, respectively. Blanks were upset on a 3000-t capacity press with a 500 mm wide block. Forged discs with a 700-780°C surface temperature were kept in a heating furnace at 650°C for 108 hr, and cooled to 160°C. Hardness of the forging was 212-241 HB after this treatment. Finally, the discs were hardened at 860°C, cooled in oil and tempered at 610-630°C. The hardness of individual discs, then varied between 269-311 HB. Conclusions: (1) the preliminary broaching of ingots with a forging reduction ratio of 3 did not affect the mechanical properties of the discs forged tangentially

Card 1/2

Dependence of the disc quality ...

3/182/62/000/005/002/007
D038/D113

at an upsetting rate of 2.5; (2) a 1.5 upsetting rate was insufficient for working 300 mm thick discs weighing 5.7 t; (3) an upsetting rate of 4 is recommended for up to 300 mm thick turbine disc forgings; (4) preliminary upsetting of ingots promoted better and more uniform mechanical properties along the entire forging at 1.5 and 2.5 upsetting rates; (5) the mechanical properties of the circumferential disc zones were only slightly affected by the upsetting rate. There are 6 figures and 2 tables.

Card 2/2

GENERSON, Isaak Getsелеvich; PAVLOVICH, P.M., inzh., retsenzents;
DENINA, I.A., red.izd-va; KUREPINA, G.N., red.izd-va;
PETERSON, M.M., tekhn. red.

[Production of disk forgings for turbines and compressors]
Proizvodstvo pokovok turbinnykh i kompressornykh diskov. Mo-
skva, Mashgis, 1962. 277 p. (MIRA 16:2)
(Steel forgings) (Disks, Rotating)

-- GENERSON, I. G.

PHASE I BOOK EXPLOITATION

SOV/6361

Generson, Isaak Getselevich

Proizvodstvo pokovok turbinnykh i kompressornykh diskov (Manufacture of Forgings for Turbine and Compressor Discs) Moscow, Mashgiz, 1962. 277 p. Errata slip inserted. 2500 copies printed.

Reviewer: P. M. Pavlovich, Engineer; Eds. of Publishing House: I. A. Denina, and G. N. Kurepina; Tech. Ed.: M. M. Peterson; Managing Ed. for Literature on Machine-Building Technology, Leningrad Department, Mashgiz: Ye. P. Naumov, Engineer.

PURPOSE: The book is intended for engineering personnel at plants and scientific research institutes.

COVERAGE: Experience gained in the fabrication of forgings for discs of turbines and centrifugal compressors is summarized. Characteristics of the steels employed are presented and special metallurgical features

Card 1/6 1/2

Manufacture of Forgings (Cont.)

SOV/6361

of their production and the effect of forging conditions on the quality of discs are discussed. Standard processes of forging and heat treatment of structural-alloy steel discs are also outlined. The author expresses his thanks to metallurgists at the Nevskiy Machine-Building Plant im. V. I. Lenin for their assistance. There are 51 references: 49 Soviet, and 2 English.

TABLE OF CONTENTS:

Foreword	3
Ch. I. Special Design-Features of Discs	
1. Discs for steam turbines	5
2. Discs for compressors	8
Ch. II. Characteristics of Steels Employed	
3. Requirements for mechanical properties of metal	13

Card ~~246~~ 212

ACCESSION NR: AP3004616

S/0182/63/000/007/0008/0012

AUTHOR: Generson, I. O.

TITLE: A variant in the technique of disc forging from elongated ingots

SOURCE: Kuznechno-shtampovochnoye proizvodstvo, no. 7, 1963, 8-12

TOPIC TAGS: forging, disc forging, ingot forms, drawing, turbine discs, compressor discs, billeting, steel 34KhN3M, steel 34KhM, steel 40Kh, defectoscope UZD-7N, forged disc mechanical properties, forged disc plasticity, drawing effect on strength, drawing effect on plasticity

ABSTRACT: A new procedure for forging turbine and compressor discs was tested experimentally. It differed from the conventional method by the omission of two steps: ingot billeting and press cutting of blanks. In the new procedure the non-billeted ingots were cut by acetylene torches into blanks which were then removed for heating and reduction to the final size. The last two steps were carried out by the usual procedure. The total time necessary for a forging cycle was shortened considerably by the new technique. The discs were made of steels 34KhN3M (composition in %: 0.33 C, 0.37 Si, 0.64 Mn, 0.92 Cr, 3.05 Ni, 0.28 Mo, 0.016 S, 0.025 P)

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ACCESSION NR: AP3004616

and steels 34KhM and 40Kh. The blanks were tested by a supersonic defectoscope UZD-7N. Minor defects were discovered in the central zones of the blanks cut from the bottom part of ingots. Tangential, central, and peripheral samples were cut from the discs, and their mechanical properties were tested; they proved to exceed the prescribed requirements. Total mechanical properties were approximately equal in all these samples, but their plasticity factors showed a decrease (in the axial direction) with the increase in degree of size reduction (draft). Orig. art. has: 1 table and 4 figures.

ASSOCIATION: none

SUBMITTED: 00

DATE ACQ: 11Aug63

ENCL: 00

SUB CODE: ML

NO REF SOV: 000

OTHER: 000

Card 2/2

ACC NR: AP6012609

SOURCE CODE: UR/0182/66/000/004/0013/0016

AUTHOR: Generson, I. G.; Libman, P. M.

ORG: none

TITLE: Experience in the production of and research into rotor forgings of Kh18Ni2M2T
corrosion-resistant austenitic steel

SOURCE: Kuznechno-shtampovochnoye proizvodstvo, no. 4, 1966, 13-16

TOPIC TAGS: austenitic steel, engineering machinery, metal forging, plasticity, impact strength, ferrite / Kh18Ni2M2T austenitic steel

ABSTRACT: This steel is used as the material for certain turbomachine elements operating in aggressive media. These elements are mostly represented by rotors, disks and other important work parts which, in addition to being corrosion-resistant, must meet high requirements as to physical homogeneity of metal and level of strength and plasticity. In particular, the initial experience in the production of rotor forgings of Kh18Ni2M2T austenitic steel (~0.09% C, ~0.89% Si, ~1.50% Mn, ~16.6% Cr, ~13.3% Ni, ~2.50% Mo, ~0.66% Ti, ~0.010% S, ~0.018% P) at the Neva Machine Building Plant imeni V. I. Lenin has revealed that some of

Card 1/3

UDC: 621.984

L 44351-66

ACC NR: AP6012609

these requirements (particularly the plasticity and impact strength of the rotor metal) are difficult to meet. Accordingly, to eliminate this snag, the authors experimentally produced a 2,280-kg rotor forging from a 3,750-kg ingot. The forging itself was produced in a 3000-ton press at temperatures of 1160-860°C, in 7 hot-upsetting and drawing operations until it was brought into the shape shown in Fig. 1. After this it was cooled in air and heat-treated

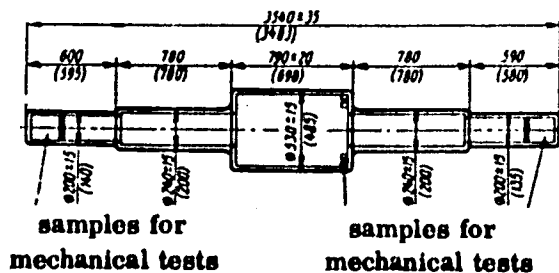


Fig. 1. Sketch of rotor forging (snagging contour) indicating the sites from which samples were taken.

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L 44551-66

ACC NR: AP6012609

(austenitized at 1150-1170°C with cooling by running water and tempered at 820-840°C for 10 hr with cooling in furnace to 150°C). Subsequent mechanical tests of samples showed a satisfactory level of mechanical properties in the longitudinal direction but unsatisfactory plasticity and impact strength for tangential samples taken from the rotor-barrel end. This prompted a thorough microstructural investigation of the quality of the metal of the entire rotor, which revealed a high content of ferritic phase (as much as 7-9%) running in striated form in the direction of (longitudinal) drawing; this accounts for the relatively low plasticity and impact strength of the metal of the tangential and radial specimens. To reduce the α -phase content and to improve the plasticity and impact strength of Kh18Ni2M2T steel, metallic Ca (0.5 kg/ton) and Co (2 kg/ton) were added to the melt from which the next forging was produced. This time the mechanical properties of the tangential and radial specimens were also found satisfactory. Orig. art. has: 7 figures, 4 tables.

SUB CODE: 11, 13/ SUBM DATE: none/

Card 3/3 blg

1st AND 2nd CODES		PROCESS AND PROPERTIES INDEX	1st AND 2nd CODES
<p><i>ca</i></p> <p>The relation between carbohydrate and fat metabolism. I. S. G. GANES AND Z. DUNNASTON. <i>Zhurnal ekspt. Biol. Med.</i> 11, 6-11(1929).--In dogs whose diet is loaded with sugar and neutral fat there is a definite relationship between the intermediate metabolic products of fat and carbohydrate. This is especially well observed in the peripheral blood, where the inverse ratio between the lactic acid and acetone bodies is noted. In exptl. loading with neutral fat there is together with the rise in the blood neutral fat an increase in the acetone bodies accompanied by a fall in the lactic acid. On the contrary, in the loading with sugar there is a rise in lactic acid together with a drop in the acetone bodies.</p> <p style="text-align: right;"><i>112</i></p> <p style="text-align: right;">B. MONOD</p>			
<p>AND SEE METALLURGICAL LITERATURE CLASSIFICATION</p>			

[illegible]

CO- 118

Processes and Properties of
Lysates and growth. II. Influence of lysates of the
testicles, ovaries, liver, thymus and hypophysis on the
weight of rabbits. S. O. Grun and G. B. Natanson.
Med. zap. (Ukraine) No. 7-8, 1945. One set of
control animals (A) received injections of physostigmine,
the other set (B) received no injections whatever. The
animals receiving lysates of the hypophysis and the con-
trol A grew faster than the control B. Only for the
last 3 months did the control A fall behind the treated
animals. The other lysates markedly depressed the
weight of the rabbits compared with the B controls.
These effects could not be ascribed to the hormone con-
tent of the lysates since no hormones could be detected
in them. III. S. O. Grun, S. O. Vais and T. O. Ostro-
shin. *Ibid.* 87-101. Administration of the lysate of the
tooth and surrounding tissue (I) to puppies (from the
same litter) produced a marked increase in weight as
compared with the controls, this effect lasting throughout
the entire period of observation (12-16 months). Lysates
of the skin had no effect on growth, the subsequent in-
jection of I (at the age of 2 months) resulting in a marked
increase in weight. Lysates of the muscle had no effect.
Subsequent administration of I (at the age of 4 months)
was ineffective. Probably age is an important factor for
the action of I, since the latter was also more effective
in children than in adults. Sex and the initial weight of
the puppies had no influence on the weight increase.
None of the lysates had any effect on the growth of teeth
or on ossification of bone. Similar effects were produced
on rabbits. S. A. Curran

450-354 METALLURGICAL LITERATURE CLASSIFICATION

The mechanism of alimentary hyperglycemia. I. The speed of appearance of hyperglycemia after administration of sucrose. S. G. Soson and P. M. Charnaya. *MM, expi.* (L'khaine) 1950, No. 6, 37-43.—Since glucose is very rapidly absorbed from the gastrointestinal tract, sucrose (which has to be broken down to glucose and fructose before absorption) was introduced into the stomach of dogs by a tube. Hyperglycemia appeared 1-10 min. after the administration of sucrose (av. = 1.8 min.). Administration of the same quantities of water produced no hyperglycemia. Administration of sucrose after denervation of the liver either produced no hyperglycemia or very markedly increased the latent period. It is, therefore, concluded that the primary alimentary hyperglycemia is produced reflexly and that liver denervation favors the accumulation of carbohydrates in the liver.

S. A. Soson

S. A. Corvett

112

117

PROCESSES AND PROPERTIES

The nitrogen composition of histolysates M. G. Gerasimov and L. A. Khaimovskh. *Ann. Med. (U. S. S. R.)* 14, 500-7 (1949); *Chem. Zentr.* 1936, II, 3141. The same manner of prepn. of histolysates assures typical correlation of the quant. N compn. Expts. indicated that hydrolyzates are best prepd. by thorough splitting up of the proteins. M. G. Moura

112

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ASAC 11.4 METALLURGICAL LITERATURE CLASSIFICATION

112

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The influence of disturbance of the thyroid function upon the sugar and cholesterol levels of the blood. S. G. Genes and H. L. Lipinski. *Bull. hist. med. exp. U. R. S. S. S.* 3, 345-7 (1937) (in English).—The sugar (I) in the blood of dogs after bilateral thyroidectomy falls from 78-84 to 72-80 mg. %. Cholesterol (II) increases from 75-91 to 90-118 mg. %. There is a rise in I and a fall in II when the dogs are fed thyroid gland. When the treatment is stopped the values become normal. The changes in I and II levels do not coincide in time nor in intensity.

S. A. Karjala

S. A. Krivina

A B C D E METALLURGICAL LITERATURE CLASSIFICATION

CA 11F

Processes and Properties Index

Variations and some interrelationships between the constituents of bile and blood in dogs with bile fistulas. IX. Variations in the dry residue, bilirubin, cholesterol, bile salts and in the blood sugar and cholesterol in response to hepatectomy. S. G. Geras and E. L. Liphind. *Mrd. zhizn. (Ukraine)* 1967, 10, 7, 8-22.—Prolonged administration of hepatectomy led to a decrease in the cholesterol content of the bile and blood and an increase in the bile acids of the bile and in the blood sugar. S. A. Corson

ASB-51.4 DETAILING LITERATURE CLASSIFICATION

113

CP

The consumption of carbohydrates in the tissues of the diabetic organism. S. G. Geras, L. A. Khamovitch and T. S. Yakusheva. *Russ. Med. med. exp.* U. R. S. S. 548 51-1918 (in English). - The femoral muscles (I), intestinal wall (II), kidneys, spleen (III) and in some cases the lungs of diabetic (pancreatectomized) dogs are capable of releasing large amts. of sugar from the blood. I, II and III of normal and diabetic dogs liberate lactic acid into the blood, but no proportionality between this and sugar concentration was observed. ... S. A. Karjala

ASD-54.4 METALLURGICAL LITERATURE CLASSIFICATION

<p>CH</p> <p>PROCESSING AND PROPERTY NOTES</p> <p>The carbohydrate exchange between the blood and the spleen. I. The nervous system and the part played by the spleen in the carbohydrate exchange. S. G. Gains and E. A. Shevtsova. <i>J. Physiol.</i> (U.S.S.R.) 20, 781-785 (1958); <i>Chem. Zvest.</i> 1959, 1, 100. By determination of the difference between the sugar content of arterial and venous blood, it was shown that the spleen retains sugar (4.52 mg. %) in the great majority of cases. This was indicated both by single observations and by those carried out repeatedly over the course of 120 min. In individual cases a decrease of sugar by the spleen in the maintenance of a constant sugar level could be observed. There was no relation between the height of the sugar level in the blood flowing to the spleen and the amount of sugar retained by that organ. The arteriovenous blood sugar difference was appreciably reduced by severing the vagus nerves on both sides, by the administration of atropine in doses of 0.1-1 mg. per kg. of body wt., and by the intravenous injection of gynergen. No effect was produced by neuro-reflex actions, as after the introduction of cane sugar into the stomach with the pylorus ligatured or severing of the nerves of the liver. The experiments were made on dogs after fasting 60 hrs., under ether narcosis and after laparotomy. M. G. Moore</p>		<p>17</p>
<p>ASB-55A METALLURGICAL LITERATURE CLASSIFICATION</p>		<p>100-10000</p>
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11F

CA

The influence of disturbance of the thyroid function upon the sugar and cholesterol levels of the blood. S. G. Genes and R. L. Lipkind. J. Physiol. (U. S. S. R.) 24, (1977) 171 (1978). See C. A. 33, 2569. J. E. D.

ASD-35.4 METALLURGICAL LITERATURE CLASSIFICATION

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Glycogen in the lungs, liver, muscles and spleen of normal and diabetic dogs. S. G. Ganes and R. Yu. Kerttunen. *J. Physiol.* (L. S. S. R. T. 25, 1911 in English, 739-40) (1938).—The storage of glycogen (G) is favored by carbohydrate feeding and to a greater extent by intravenous glucose injection. The most marked effect was observed in the liver, followed by muscles, lungs and finally the spleen. The injection of insulin along with carbohydrate feeding does not result in an increase in G storage in the organs. The G content of lungs, spleen and muscles is lowered in dogs on a meat diet. Diabetes of short duration does not change muscle G, but in the liver and spleen it is lowered, while it is substantially increased in the lungs. Regardless of the increased introduction of sugar in diabetes, the G stores of the spleen and to some extent of the muscles are depleted. S. A. Karjala

ASB 31.4 DETAILOROLOGICAL LITERATURE CLASSIFICATION

PROCESSES AND PROPERTIES INDEX																									
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<p>26</p> <p>11</p> <p>Variations and interrelationships between certain constituents of bile and blood. X. The effect of hepatolyzates on certain functions of the chloroformed liver. S. G. Gence and E. L. Lipkind. <i>M.d. expl.</i> (Ukraine) 1939, No. 4, 34-39 in French, 50; cf. C. A. 32, 3465. -- A single dose of 0.5 cc./kg. body wt. of CHCl₃, given <i>per se</i> to dogs with a bile-duct fistula, at first lowers, then markedly increases bile secretion, its dry residue, the bilirubin and cholesterol contents. The bile acid content is especially lowered. Later its content increases up to normal. The blood sugar content does not change but the cholesterol content of blood increases. Administration of 3 doses of CHCl₃ has a strong lowering effect on these components of bile and blood without subsequent restoration to normal. The hepatolyzate did not affect in any way the components mentioned. CHCl₃ inhibits bile formation rather than the secretory function of the liver. T. Laanes</p>																									
<p>AND SEE DETAILING LITERATURE CLASSIFICATION</p>																									

Participation of the spleen in carbohydrate metabolism in healthy angiotomized dogs, and under ether narcosis and laparotomy. S. G. Geras. *Bull. biol. med. expi. U. S. S. R.* 7, 81-4 (1930) (in English). The spleen of dogs in ether narcosis and laparotomy retains on the average 11 mg. % of sugar, whereas in normal angiotomized dogs the value is only 4 mg. %. The glycogen content (I) was invariably lower in ether narcosis and laparotomy, while the change in lactic acid (II) produced by the spleen was insignificant. Since the sugar taken up by the spleen is not converted into I or II, it must either be completely oxidized by the spleen or converted into non-carbohydrate material. S. A. Karjala

ALSO SEE DETAILLED LITERATURE CLASSIFICATION

114

The effect of ether narcosis and laparotomy on the carbohydrate exchange between the blood and peripheral tissues. S. G. Genes. *Bull. bio. med. appl. U. S. S. R.* 7, 197-201 (1959) (in English).—Ether narcosis, and especially narcosis with laparotomy, induces an increased retention of blood sugar by the limb tissues, and causes a sharp increase in the amt. of lactic acid carried to the blood from the limb tissues. The latter is probably due to anoxemia caused by narcosis and to the increased liberation of adrenaline into the blood. S. A. Karjala

100 and 120 (upper)

100 and 120 (lower)

CONTRIBUTION TO THE PATHOGENESIS OF DIABETES. S. G. Gentry. *Bull. hist. med. exp. l. R. S. S. S.* 461-4 (1929) (in English).—In both the normal and diabetic dogs sugar is much more frequently retained by the tissues than released. In normal animals the increase of sugar retention from 4.7 to 11.0 mg. % is accompanied by a rise of the av. sugar level from 95 to 125-41 mg. %. In diabetic dogs the retention of 10 mg. % sugar takes place at a much higher level (317 mg. %). The amt. of lactic acid liberated by the tissues of the hind limb of normal animals is small (1.1 mg. %). In diabetic animals the av. amt. of lactic acid liberated is 7.4%. The liver of diabetic dogs liberates into the blood much more sugar (an av. of 22 and 1.3 mg. %) than the liver of healthy dogs (15 and 8 mg. %, resp.). Diabetes is also accompanied by a considerably increased retention by the liver of lactic acid from the blood. The amt. of lactic acid retained from the blood by the liver is much less than the sugar liberated by it into the blood stream. The retention of sugar from the blood by the tissues of diabetic dogs is increased considerably. Along with this there is an increasedogenesis of carbohydrates from noncarbohydrates.

W. R. Henn

100 and 120 (upper)

100 and 120 (lower)

CONTRIBUTION TO THE PATHOGENESIS OF DIABETES. S. G. Gentry. *Bull. hist. med. exp. l. R. S. S. S.* 461-4 (1929) (in English).—In both the normal and diabetic dogs sugar is much more frequently retained by the tissues than released. In normal animals the increase of sugar retention from 4.7 to 11.0 mg. % is accompanied by a rise of the av. sugar level from 95 to 125-41 mg. %. In diabetic dogs the retention of 10 mg. % sugar takes place at a much higher level (317 mg. %). The amt. of lactic acid liberated by the tissues of the hind limb of normal animals is small (1.1 mg. %). In diabetic animals the av. amt. of lactic acid liberated is 7.4%. The liver of diabetic dogs liberates into the blood much more sugar (an av. of 22 and 1.3 mg. %) than the liver of healthy dogs (15 and 8 mg. %, resp.). Diabetes is also accompanied by a considerably increased retention by the liver of lactic acid from the blood. The amt. of lactic acid retained from the blood by the liver is much less than the sugar liberated by it into the blood stream. The retention of sugar from the blood by the tissues of diabetic dogs is increased considerably. Along with this there is an increasedogenesis of carbohydrates from noncarbohydrates.

W. R. Henn

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<div style="position: absolute; top: 10px; left: 10px; font-family: cursive; font-size: 2em;">ca</div>										<div style="position: absolute; top: 10px; right: 10px; font-size: 1.5em;">18</div> <p>Some functions of the liver of organisms in states of allergy. S. G. Gross and E. L. Lipkind. <i>Bull. biol. med. exp.</i> U. R. S. S. B., 465-7(1959) (in English).—The lactic acid content of the blood, the amt. of bile and bile acids and the glycogen content of liver and other organs of rabbits were investigated in order (1) to verify the belief that the increase of lactic acid in the blood during the sensitization is a pathogenic factor of the hypertergic reaction and (2) to elucidate whether the sensitization of the dog affects the sp. functions of the liver. Injection of horse serum in dogs had no influence upon the glycogen of the organs. In dogs which showed no decrease of blood pressure there was no simultaneous increase of the lactic acid of the blood, whereas in dogs with a distinct decrease of blood pressure the increase of lactic acid was also observed. The content of glycogen in the organs of dogs with a decrease of blood pressure was the same as that of dogs without such a decrease. The lactic acid of the blood of sensitized dogs does not always increase. The shock is not necessarily connected in dogs with changes in the glycogen content of tissues. No disturbances are observed in the sensitized liver as regards its sp. functions, i. e. the secretion of bile and bile acids. Only the shock injection produces such changes. W. R. Hren</p>																			
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Fluctuation and mutual relation of some constituents of bile and blood. VII. Relation of some constituents of bile and blood. S. G. Genes. *Mid. espd.* (Ukraine) 1940, No. 8, 80-84; *Chem. Zvez.* 1941, 1, 75; of C. A. 33, 1849¹.—Rups, on 12 days for 10-30 days gave the following results: there is no regularity between the concn. of cholesterol and bile acid, nor is there any relation between the concn. of bile acid and bilirubin. This seems to indicate an irregularity in the formation and excretion of these substances in the liver. The concn. of cholesterol and bilirubin are not correlated. The concn. of cholesterol in the bile and in the blood are independent of each other. There is no correlation whatever between the concn. of sugar and cholesterol in the blood, and that in bile acid and bilirubin. M. Hirsch

At Home

11E		PROCESSES AND PROPERTIES INDEX	
<p><i>ca</i></p> <p>Metabolism of the carbohydrate components between the blood and the intestinal walls of healthy and diabetic dogs. S. G. Gross, E. L. Lipton and A. P. Moskalenko. <i>Problems of Physiology</i> (U. S. S. R.) 8, No. 1, 43-53 (1940).</p> <p>—The intestinal walls of healthy dogs absorb sugar from the blood stream in greater amt. the higher the sugar content of the arterial blood. The intestinal walls of most diabetic dogs differ little in this regard (in contrast to the skeletal muscles); they absorb more sugar from arterial blood with a corresponding increase of the sugar content of the blood. As compared with the tissues of the limbs, the intestinal walls absorb a considerably smaller amt. of sugar from arterial blood in both healthy and diabetic dogs. The intestinal walls of healthy dogs permit passage into the blood stream of a very small amt. of lactic acid, while the intestinal walls of diabetic dogs increase the passage of lactic acid into the blood, but to a considerably smaller degree than do the tissues of the limbs. Either narcosis and laparotomy increase sharply the formation of lactic acid by the tissues of the limbs (skeletal muscles) and have almost no effect in this regard on the walls of the intestines. The passage of insignificant amts. of lactic acid into the blood stream by the walls of the intestines depends, probably, on the very low content of glycogen in them and on their weak glycolytic ability. Either narcosis and laparotomy have no effect on the qual. relation between the walls of the intestines and sugar and lactic acid. The results of the expts. do not support the theory of "nonutilization" of sugar by the tissues of the diabetic organism. 53 references.</p> <p style="text-align: right;">W. R. Henn</p>			
<p>ASD-51A METALLURGICAL LITERATURE CLASSIFICATION</p> <p>1000 1100 1200 1300 1400 1500 1600 1700 1800 1900 2000 2100 2200 2300 2400 2500 2600 2700 2800 2900 3000 3100 3200 3300 3400 3500 3600 3700 3800 3900 4000 4100 4200 4300 4400 4500 4600 4700 4800 4900 5000 5100 5200 5300 5400 5500 5600 5700 5800 5900 6000 6100 6200 6300 6400 6500 6600 6700 6800 6900 7000 7100 7200 7300 7400 7500 7600 7700 7800 7900 8000 8100 8200 8300 8400 8500 8600 8700 8800 8900 9000 9100 9200 9300 9400 9500 9600 9700 9800 9900</p>			

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16

PROCESSING AND REPRODUCTION

The role of liver in carbohydrate metabolism of healthy and diabetic dogs. S. G. Genza, V. B. Levina, P. M. Charnaya and T. N. Yakubova. *Problemy Endokrinol* (U. S. S. R.) 9, No. 2, 37-40(1940). - The liver of healthy 10-kg. dogs recd. 40 g. of sugar daily. The liver of diabetic dogs recd. 50 g. of sugar daily. The data presented support the supposition that hyperglycemia and glucosuria in diabetes are the results of an overproduction of sugar. In diabetes the absorption of lactic acid by the liver from the blood increases considerably. 30 references.

W. R. Henn

CLASSIFICATION

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METALLURGICAL LITERATURE CLASSIFICATION

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COLLECTIONS

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<div style="display: flex; justify-content: space-between;"> ca 112 </div> <div style="border: 1px solid black; padding: 10px; margin: 10px;"> <p style="text-align: center;">C. P. A.</p> <p>Oxygen consumption and carbon dioxide formation in normal and diabetic dog tissues. S. G. Genes and N. T. Dementil. <i>Diabetologia</i> 5, 636-47 (1969). Carbohydrate metabolism and energy production are not reduced in the pancreatized animals; increased carbohydrate formation from noncarbohydrate sources and increased ketogenesis occur. The respiratory quotient of depancreatized animals differs little from that after recovery, and is about 1. The low R. Q. of the whole isolated pancreas is associated with increased O consumption and reduced liberation of CO₂; CO₂ may even be retained by the liver for increased urea formation. C. P. A.</p> </div> <div style="display: flex; justify-content: space-between; margin-top: 10px;"> <div> <p>ASB-14.4 METALLURGICAL LITERATURE CLASSIFICATION</p> <p>8000 55010100</p> <p>100000 *</p> </div> <div> <p>800000 000000</p> <p>800000 000000</p> <p>800000 000000</p> </div> </div>																																																			

Processes and Properties Index	
Ca	<p>The sugar consumption of the diabetic organism. N. Q. Gerasimov, <i>J. med. Ukraine</i> 10, 87 (1940) (Russian and English summaries) (1940); cf. C. A. 33, 2340; 36, 2321. The tissues of the diabetic organism not only fail to lose their ability to take sugar from the blood but even take more sugar in absolute quantities than do the tissues of the normal organism. In the presence of a deficiency and especially an absence of insulin in the organism the tissues can take up the required amt. of sugar only at an elevated blood-sugar level. In pancreatic diabetes hyperglycemia is, consequently, a compensating adaptation of the organism which assures the normal consumption of carbohydrates by the tissues. There are, therefore, no grounds for attempting to eliminate hyperglycemia in diabetes at any cost. The carbohydrate consumption in the tissues is characterized chiefly by the process of carbohydrate conversion into lactic acid; only the lesser part of the sugar is oxidized in the tissues. At the same time the oxidation of the acetone bodies in the tissues of the diabetic organism is increased. Consumption of carbohydrates and acetone bodies by the tissues of the extremities, which form the chief mass of the diabetic organism, is indicated also by the corresponding respiratory quotient, 1.11.</p> <p>Ruth Berggren</p>
<p>ASH-SLA METALLURGICAL LITERATURE CLASSIFICATION</p>	

GENES, S. G.

"On the Chelagogic Action of Decholin," *Farmakol. i Toksikol.*, 4, No.2, 1941

Chief, Dept. New Organopreparations, Ukr. Central Inst. of Endocrinology and
Organotherapy.

BC

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PROCESSING AND PROPERTIES UNIT

A-4

Glucose consumption and carbon dioxide formation in normal and diabetic rats. E. G. Gross and N. T. Dementill (Biochimica, 1961, 1, 425-447). Carbohydrate metabolism and energy production are not reduced in depancreatized animals; increased carbohydrate formation from non-carbohydrate sources and increased lipogenesis occur. The carbohydrate source of glucose differs little from that after R.Q. of depancreatized animals differs little from that after recovery, and is about 1. The low R.Q. of the whole isolated pancreas is correlated with increased O_2 consumption and reduced formation of CO_2 ; CO_2 may even be released by the liver for increased liver formation.

H. L. E.

ASD-31A METALLURGICAL LITERATURE CLASSIFICATION

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PROCESS AND PROPERTIES INDEX	
11-H	Effect of insulin on the elimination of sugar and retention of lactic acid by the liver. S. G. Geras, P. M. Charnaya, and T. S. Yakhushova (Kfali. Centre. Inst. Endocrin. Organotherapy, Kharkov). <i>Russk. Akad. Med. (U.S.S.R.)</i> 11, 110-23 (1911). --The action of insulin on the carbohydrate function of the liver in angiotomized dogs was investigated. After 30 min. following insulin injection, in spite of a great drop in the sugar level in the influent blood, this level in the effluent blood actually shows a rise; concurrently with this and with the heightened lactic acid level, the retention of the latter by the liver also increased. The av. sugar elimination was 15 mg. % and lactic acid retention 8 mg. %. Depancreatized animals also show a similar picture of sugar elimination and lactic acid retention (21 and 14.1 mg. %, resp.). Changes in sugar level of the influent blood do not affect the elimination function of the liver. In the absence of insulin indications are for lower elimination of sugar and greater lactic acid retention with higher levels in the influent blood. The expts. thus illustrate the homeostatic liver reaction. G. M. Koudapoff
ASB-514 DETAILING LITERATURE CLASSIFICATION	

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11-6

Origin of hyperketonemia in diabetes. S. G. Genes and N. M. Petzhanova (Ukrain. Central Inst. Endocrinol., Khar'kov). *Byull. Eksp. Biol. Med.* 11, 266 (1941). --The hyperketonemia occurs not because of decreased oxidation of ketone bodies in the muscle, but because of increased generation in the liver. Actually oxidation of the ketone bodies in muscle occurs at a higher than normal rate, but this lags behind the output of the liver. From both healthy and depancreatized angiotomized dogs, simultaneous blood samples were taken of the in- and out-flowing blood from the liver and hind extremities. The av. values (expressed as β -hydroxybutyric acid) were: liver elimination 1.7 mg. % in healthy and 4.0 mg. % in diabetic dogs; muscle retention 0.7 mg. % in healthy and 1.6 mg. % in diabetic dogs. In a few instances this trend was unexplainedly reversed.

G. M. Kosolapoff

AS4-51.6 METABOLICAL LITERATURE CLASSIFICATION

TEST AND TWO TADERS		PROCESSED AND PROPERTIES INDEX		TEST AND TWO TADERS	
10		The origin of hyperglycemia and hyperlactacidemia during ether narcosis and laparotomy. S. G. Ganes, B. I. Likhod, V. B. Levin, A. P. Moshakenko, P. M. Chasovnik and E. N. Yakusheva. <i>J. Physiol. U.S.S.R.</i> 30, 243-244 (in English, 243) (1941). Expts. on dogs show that hyperglycemia is due to increased elimination of sugar by the liver into the blood. The uptake of sugar by the peripheral organs from the blood is increased, as a result of an increased blood sugar level. The hyperlactacidemia is primarily the result of an increased elimination of lactic acid into the blood from the tissues of the lower extremities. The uptake of lactic acid from the blood by the liver is higher than normal. 27 references.		115	
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Effect of lipase of the pancreas on fat-carbohydrate metabolism in experimental diabetes S. G. Gouss, S. M. Lettes, S. Ya. Karliner, P. M. Charnaya and I. S. Yakusheva. *Russl. Eksp. Med. Med.* 10, No. 1, 52-5 (1942).--In exptl. pancreatic diabetes in dogs elimination and retention of fat in liver and test extremities were observed. Predominant effect is the elimination of fat from the liver and its deposition in the legs. Injection of lipase of the pancreas increases the removal of fat from both liver and legs. The ketone bodies show an analogous picture. Increased elimination of sugar and retention of lactic acid in the liver and the reverse process in the legs in diabetes are also observed. The above injection reverses the trend in the legs and increases liver retention of lactic acid and lowers sugar elimination. (G. M. Kosolapoff)

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<p>Consumption of the carbohydrate components of the cardiac muscle of healthy and depancreatized dogs. S. G. Geras, P. M. Charnaya and T. S. Yakhsheva. <i>Russl. Zhurn. Biol. Med.</i> 16, No. 1, 84 (1942); cf. C. A. 35, 1549P. — Insulin appears to cause a small increase of utilization of carbohydrate components in the cardiac muscle of healthy dogs; in depancreatized dogs the effect is to bring the utilization closer to that of healthy dogs not treated with insulin. G. M. Koudachoff</p>	
<p>ASB-56 METALLURGICAL LITERATURE CLASSIFICATION</p>	
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REPORTING	REPORTING